

a MOS transistor having a gate connected to said negative voltage, one source/drain terminal connected to a drain of said PMOS transistor and [and] the other source/drain terminal connected to a ground supply, said MOS transistor being operated in response to a level of said negative voltage,

said PMOS transistor selectively providing power to said MOS transistor in response to said output signal of said controller circuit.

REMARKS

Reconsideration and allowance are respectfully requested. By this amendment, the specification has been editorially amended, and claims 1, 2 and 4 have been amended. Claims 1-5, 7 and 8 will be pending in the application.

No amendments raising new issues or requiring further consideration and/or search have been proposed. Accordingly, entry and consideration of this Amendment are respectfully requested under Rule 116.

1. Response to Advisory Action Mailed January 14, 1997

In response to Applicant's Amendment Under 37 CFR 1.116 filed December 30, 1996, the Examiner issued an Advisory Action (Paper No. 23) that was mailed on January 14, 1997. This Amendment is proposed in lieu of the Amendment filed December 30, 1996. However, in view of the Examiner's indication in the Advisory Action that claims 2 and 3 would be allowed, the herewith-proposed amendments to claim 2 are identical to the previously-proposed amendments to claim 2.

2. Request for Withdrawal of Premature Final Office Action

Applicant respectfully requests that the finality of the pending Office Action mailed September 30, 1996 be withdrawn. This request is in view of MPEP § 706.07(d), which states that:

If, on request by applicant for reconsideration, the primary examiner finds the final rejection to have been premature, he or she should withdraw the finality of the rejection.

Since this application is still pending before the primary examiner, the issue of prematureness is deemed appropriate for reconsideration, even though Applicant has already responded once to the pending Office Action. *See* MPEP § 706.07(c).

Applicant respectfully submits that the finality of the pending Office Action is premature and inappropriate at the present stage of prosecution of this continuing application. In the parent application, Ser. No. 08/596,423, on July 18, 1996, Applicant filed an Amendment under Rule 116 that proposed to amend claims 1, 3-4 and 7. In claim 1, for example, Applicant proposed to cancel detailed limitations for the substrate voltage level detector and add a limitation that the controller controls operation of the substrate voltage level detector such that the "substrate voltage level detector is not operative to drive said oscillator during a stand-by state of a self-refresh mode of said semiconductor memory device."

On July 25, 1996, the Examiner issued an Advisory Action in response to this Amendment and refused its entry because the proposed claim amendments allegedly raised new issues that would require further consideration and/or search. The Examiner further noted that "[t]he proposed amendment provides significant changes in the scope of the claims, thus requiring further search and/or consideration." The Examiner was presumably referring to claim 1 in particular, because that claim's scope was significantly changed both by the proposed cancellation of the subject matter detailing the claimed substrate voltage level detector and the proposed new limitations defining the operations of the claimed controller.

In order to have this new claim language considered and entered, Applicant filed a continuation application and a Preliminary Amendment. The Preliminary Amendment proposed substantially the same claim amendments as those proposed in the Amendment that was refused entry in the parent application, including cancelling the same detailed limitations for the substrate voltage level detector in claim 1 and adding a slightly revised limitation therein that the controller controls operation of the substrate voltage level detector such that the "substrate voltage level detector is not operative to drive said oscillator in the stand-by state of the self-refresh mode only when the detected substrate voltage level is a desired level." For the Examiner's convenience, the proposed amendments to claim 1 are compared below.

Amendment "D" 7/18/96

1. (Amended) A substrate bias generator of a semiconductor memory device having a voltage pump circuit to boost a substrate voltage in response to an input of an oscillating signal generated in an oscillator, said substrate bias generator further comprising:

a substrate voltage level detector having said substrate voltage input thereto and outputting a signal which drives said oscillator response to a substrate voltage level detected by said substrate voltage level detector[, said substrate voltage level detector comprising:

a first MOS transistor having a channel connected to a power supply, said first MOS transistor being operated in response to a level of said substrate voltage, and

a second MOS transistor having a channel connected in series with a channel of said first MOS transistor and to a ground

Amendment "F" 9/20/96

1. (Amended) A substrate bias generator of a semiconductor memory device having a voltage pump circuit to boost a substrate voltage in response to an input of an oscillating signal generated in an oscillator, said substrate bias generator further comprising:

a substrate voltage level detector having said substrate voltage input thereto and outputting a signal which drives said oscillator in response to a substrate voltage level detected by said substrate voltage level detector[, said substrate voltage level detector comprising:

a first MOS transistor having a channel connected to a power supply, said first MOS transistor being operated in response to a level of said substrate voltage, and

a second MOS transistor having a channel connected in series with a channel of said first MOS transistor and to a ground

supply and having a gate connected to said substrate voltage]; and
a controller having input thereto a chip active enable signal, a self refresh mode enable signal, and an output signal of said substrate voltage level detector, said controller controlling a switching operation of said substrate voltage level detector in response to said substrate voltage level detected by said substrate voltage level detector, said controller also controlling said switching operation of said substrate voltage level detector in response to said chip active enable signal and said self refresh mode enable signal such that said substrate voltage level detector is not operative to drive said oscillator during a stand-by state of a self-refresh mode of said semiconductor memory device.

supply and having a gate connected to said substrate voltage]; and
a controller having input thereto a chip active enable signal, a self refresh mode enable signal, and an output signal of said substrate voltage level detector, said controller controlling a switching operation of said substrate voltage level detector in response to said chip active and said self refresh mode enable signals and said output signal of said substrate voltage level [detected by said substrate voltage level] detector such that said substrate voltage level detector is not operative to drive said oscillator in the standby state of the self-refresh mode only when the detected substrate voltage level is a desired level.

Notwithstanding that the proposed claim amendments in the continuing application were substantially the same as those presented earlier, but denied entry, in the parent application, particularly the amendments changing claim 1's scope, the Examiner finally rejected claims 1, 4, 5, 7 and 8 in the Office Action mailed September 30, 1996. This was the first action in the continuing application.

MPEP § 706.07(b) states that:

it would not be proper to make final a first Office action in a continuing or substitute application where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry for one of the following reasons:

(1) New issues were raised that required further consideration and/or search

This provision of the MPEP is considered applicable here and the finality of the pending Office Action is thereby considered improper. In particular, the following criteria are established:

- (1) this is a continuing application,
- (2) the Office Action mailed September 30, 1996 is a first action in this continuing application,
- (3) the Preliminary Amendment in this continuing application "contains material" presented earlier, but denied entry, in the earlier application after final rejection, and
- (4) the earlier-presented material was denied entry because new issues were raised by substantial changes in claim scope.

Through the timely filing of numerous amendments and continuations, this Applicant has been earnestly seeking to advance the prosecution of this application and to define the bounds of the invention to which he feels justly entitled. The Applicant's good-faith efforts to do so should not be cut short by hasty decisions that seriously prejudice the Applicant's eventual patent protection by forcing him to file yet another continuation. As prudently set forth in MPEP § 706.07 (at page 700-79):

present practice does not sanction hasty and ill-considered final rejections. The applicant who is seeking to define his or her invention in claims that will give him or her the patent protection to which he or she is justly entitled should receive the cooperation of the examiner to that end, and not be prematurely cut off in the prosecution of his or her case.

....

The Examiner should never lose sight of the fact that in every case the applicant is entitled to a full and fair hearing, and that a clear issue between applicant and examiner should be developed, if possible, before appeal.

Moreover, the Examiner should not hastily determine that finality is proper simply because the amendments proposed in the Preliminary Amendment to the continuing application are not word-for-word identical to those proposed, and unentered, in the after-final Amendment in the parent application. The central issue is whether new issues are raised by the proposed amendments. As shown above in the comparison of the proposed amendments to claim 1, in both cases the Applicant has been seeking to further define the operation of the controller to control the switching operation of the substrate voltage level detector during a stand-by state of a self-refresh mode. These claim amendments had never been proposed before in the prosecution of this application. This is not a case where Applicant is simply re-hashing old issues in an attempt to prolong prosecution.

In a sense, the Examiner admits that a first action final was improper in the continuing application, because many issues were newly raised by the Examiner in the Office Action mailed September 30, 1996 in response to the proposed claim amendments. Proper Patent Office procedure requires that these new issues should be more clearly defined. For example, Applicant has not been given any opportunity to adequately respond to the Examiner's new grounds for rejecting the claims under 35 U.S.C. § 112 (second paragraph).

In view of the foregoing, Applicant respectfully submits that the finality of the pending Office Action is improper and premature and should be withdrawn.

3. Request for Interview

Applicants respectfully request an Interview with the Examiner because it is believed that a face-to-face Interview would greatly assist the prosecution of this application and would facilitate resolution, rather than escalating division, over the language of the claims. An Interview is considered especially appropriate in view of the prematurity of the finality of the pending Office Action. When it is convenient, the Examiner is requested to telephone the undersigned to schedule an Interview.

4. Specification and Drawings Submitted with FWC Filing Papers

In the pending Office Action, the Examiner noted that a specification and drawings were submitted with the FWC filing papers. Apparently, the Examiner was referring to the English language translation of Korean application 93-13276, as listed in entry "OR" on the Form PTO-1449 submitted with the IDS on August 5, 1996. Instead of considering this document, the Examiner lined out its listing on the Form PTO-1449, a copy of which was returned with the Office Action.

In the Amendment filed December 30, 1996, Applicant respectfully requested the Examiner to properly consider this document and enter his initials of Form PTO-1449 per MPEP § 609 in the left hand column. For the Examiner's convenience, a fresh copy of the Form PTO-1449 was submitted with the Amendment for that purpose.

In the Advisory Action mailed January 14, 1997, the Examiner stated that:

The IDS submitted [sic] 12/30/96 has not been considered because such is not in compliance with 37 C.F.R. 1.97. The IDS does not include the Certification, petition and fee required, a copy of the references and the concise English explanation of the non-english references.

Applicant does not understand this statement. No IDS was submitted on December 30, 1996. As set forth above, Applicant only submitted a courtesy copy of the Form PTO-1449 submitted with the IDS filed on August 5, 1996, before the mailing of the pending Office Action. No Certification, petition, or fee was required. The references listed on the PTO-1449 were all submitted with the 8/5/96 IDS. Applicant has merely responded to the Examiner's apparent failure to properly consider the English language translation of Korean Application No. 83-13276, submitted with the IDS on August 5, 1996. As set forth in the previous Amendment, this document was properly filed on that date, and apparently misconstrued by the Examiner, as evidenced by the lining out of this reference on the returned copy of Form PTO-1449.

5. Objections to the Disclosure

The specification stands objected to because lines 17 and 18 of page 6 were not understood. They were corrected as required by the Office Action in the previously-filed Amendment. Identically with the previously-filed Amendment, claim 2 has been corrected for proper antecedence as required in the Office Action.

6. Claim Rejections Under 35 U.S.C. § 112 (Second Paragraph)

Claims 1, 4, 5, 7 and 8 stand rejected under 35 U.S.C. § 112 (second paragraph) as allegedly being indefinite. The antecedent support for "self-refresh mode" and "standby state of the self-refresh mode" have been even more clearly defined, in response to the Office Action.

The Office Action contended that the phrase "standby state of the self-refresh mode" can not possibly be understood. In the Amendment filed December 30, 1996, Applicant showed that:

- (1) it is notoriously well-known that memory devices, particularly RAM devices, require constant periodic refresh cycles to maintain cell charges,
- (2) commonly, dynamic RAM's include a self-refresh mode designed therein to perform this function, and
- (3) it is well known in the art that a self-refresh mode is divided into an active state and a stand-by state (*see* the present specification at, for example, page 3, line 22, through page 4, line 26).

In the Advisory Action, the Examiner stated that:

The mere fact that memory circuits have these inherent modes, this still does not cause the claim to be definite. Clearly, the memory cell is recited by way of environment and there is no "means" recited to provide these modes.

Although it is submitted that one skilled in the art would have readily understood them, claims 1 and 4 have been even further amended to point out that the semiconductor memory device includes a memory circuit in which refresh operations are conducted during a self refresh mode. The device is also defined as having means for providing a self refresh mode enable signal and a chip active enable signal to define active and stand-by states of the self refresh mode. Accordingly, the operation of the substrate bias generator is not described "by way of environment," but is even more explicitly set forth in cooperation with other recited elements.

In view of the amendments to the claims and the above remarks, it is respectfully requested that the Examiner reconsider and withdraw the rejection of the claims under 35 U.S.C. § 112 (second paragraph).

6. Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1, 4, 5 and 8 were rejected in the parent application under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,329,168 to Sugibayashi et al. ("Sugibayashi"). Applicant respectfully traverses this rejection in view of the following remarks.

In the Amendment filed December 30, 1996, Applicant showed that:

- (1) the present invention provides a substrate bias generator which reduces current consumption during a self refresh mode,
- (2) claims 1 and 4 recite a controller which controls an operation of a substrate voltage level detector such that it is not operative to drive a oscillator in the standby state of the self-refresh mode, thereby achieving the desired reduction in current consumption,
- (3) Sugibayashi does not suggest this feature, but merely teaches a substrate bias system which receives power either from an external power voltage or an internal power voltage,
- (4) Sugibayashi's/Vref can hardly be equated with a chip enable signal and Sugibayashi's power on indication signal can hardly be equated with a self refresh mode enable signal, as asserted in the Office Action,
- (5) contrary to the Office Action, the patentable significance of the limitations which define the operation of the claimed controller would have been well understood by the skilled artisan.

For the foregoing reasons, independent claims 1 and 4 have been adequately shown to patentably define over the cited prior art. Accordingly, the § 103 rejection of these claims, and claims 8 and 5 which depend from claims 1 and 4, respectively, should be withdrawn.

8. Allowable Subject Matter

The Office Action indicated that claims 2 and 3 would be allowable if rewritten as required. Since the Advisory Action indicated that the proposed amendment to claim 2 overcame the objection, these claims should be allowed.

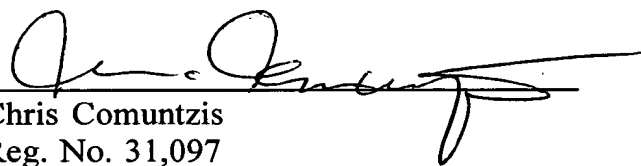
9. Conclusion

All objections and rejections having been addressed, it is submitted that the present application is in condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

CUSHMAN DARBY & CUSHMAN
Intellectual Property Group of
PILLSBURY MADISON & SUTRO, L.L.P.

By



Chris Comuntzis

Reg. No. 31,097

Tel. No.: (202) 861-3623

Fax No.: (202) 822-0944

CC/MJD
1100 New York Avenue, N.W.
Ninth Floor, East Tower
Washington, D.C. 20005-3918
(202) 861-3000.